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EXAMINER

KERNS, KEVIN P

ART UNIT PAPER NUMBER

1725

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,174

Applicant(s)

JOHANSEN ET AL.

Examiner

Kevin P. Kerns

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-19, 21, 22 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-19, 21, 22 and 25-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 11, 17, and 25-30 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 9, 11, 12, 14, 16, and 17 of copending Application No. 10/009,690 in view of Foye (US 3,556,197), and further in view of Tarmann et al. (US 2,690,600).

The claims share identical elements (steel mold housing having a plurality of channels, permeable wall material, at least one annular slit/nozzle, a mold housing comprising first and second parts, and a thermally insulating annular plate), with the exception of the restricting elements between the permeable wall and an interior wall of the mold housing. Although independent claims 11 and 17 of the present application no longer include the additional structural limitation "an insulating plate...", as set forth in independent claims 9 and 14 of 10/009,690, it would have been obvious to one of

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ordinary skill in the art to exclude this additional structural limitation, as open-ended “comprising” language exists in the present application.

However, Foye discloses an apparatus (horizontal continuous casting of round billets 13) for lubricating a molten metal mold, in which the apparatus includes a reservoir 10 of molten metal, mold assembly 8, mold section 12, plate element 11, annular gasket 20, a lubricating device 23 having upper and lower (sectors) chambers 18,27 (of the annuli) and adjustable valves 17,26 to control the circumferential supply of oil around the mold in the region of the plate element 11, and secondary water sprays (abstract; column 1, lines 12-59; column 2, lines 36-71; column 3, lines 1-75; column 4, lines 1-14 and 34-41; and Figures 1-16). In another embodiment, annular gasket 35 has six radial slots 36 (channels that form and divide a plurality of sectors) in which the flow is controlled by valves (column 4, lines 72-75; column 5, lines 1-19 and 56-58; and Figures 6-8). Although Foye discloses a plurality of valves that would “differentiate” the supply of oil around the circumference of the mold cavity for more uniform lubrication/cooling, Foye does not specifically disclose a plurality of plugs or similar restriction members that “differentiate” the supply of oil around the mold cavity.

However, Tarmann et al. disclose a device for introducing a lubricant into a mold for continuous casting of metals, including iron and steel, in which the device includes a ring groove 2 that includes inserted pieces 3 (plugs/restrictions) for subdividing the ring groove into sections 4 (segments), such that the supply of lubricant can be “differentiated” around sections 4 of the groove 2 via lubricant admission channels 5, for

the purpose of independently providing lubricant uniformly into the ring groove segments 4 (column 1, lines 1-55; column 2, lines 1-21; and Figures 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the horizontal continuous casting apparatus of copending Application No. 10/009,690, by adding the restricting elements (plurality of valves) between the permeable wall and an interior wall of the mold housing in the horizontal continuous casting apparatus of Foye, in order to "differentiate" the supply of oil/gas/coolant around the circumference of the mold cavity in controlled amounts and pressures at predetermined locations (Foye; abstract; column 1, lines 12-18 and 41-59; column 3, lines 27-42 and 66-75; column 4, lines 1-14 and 72-75; and column 5, lines 1-19 and 56-58), and by using the plurality of plugs or similar restriction members that "differentiate" the supply of oil around the mold cavity, as disclosed by Tarmann et al., in order to independently provide lubricant uniformly into the ring groove segments (Tarmann et al.; column 1, lines 26-55; and column 2, lines 1-21).

This is a provisional obviousness-type double patenting rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 11-19, 21, 22, and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kittilsen et al. (US 5,915,455) in view of Foye (US 3,556,197), and further in view of Tarmann et al. (US 2,690,600).

Kittilsen et al. disclose an apparatus for horizontal casting of light metals, in which the apparatus includes a tundish 3 with a first insulating plate 29 for supplying molten metal M that flows into a steel pipe 28 and into a mold 10, such that the mold 10 has multiple housings (including a first mold housing having a plurality of channels); a second mold housing 26; a thermally insulating annular plate (structures with 21 and 23 written thereon) arranged against the first mold housing; an oil ring 19 with oil supply channels 20 to lubricate the mold; a transition ring of insulating porous refractory material 21 to provide heat transfer via oil (from oil ring 19 and oil supply channels 20) and gas from gas supply channels 22 to the interior wall of the mold housing (in the vicinity of metal solidification region 25 and to the left of mold depth parameters L1 and

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L2); and separate primary and secondary cooling water circuits (11,12) for flow of coolant around the circumference of the mold cavity (abstract; column 1, lines 55-67; column 2, lines 1-44; column 3, lines 7-67; column 4, lines 1-67; column 5, lines 1-3; and Figures 1 and 2). One of ordinary skill in the art would have recognized that (in addition to the conventional types of mold material -- e.g. aluminum, copper, steel etc.), although the primary cooling is not specifically controlled by valve means, the removal and/or exchanges of several molds having various geometries (having dimensions with protrusions, leading to variance in the coolant flow rates through the annular slits/nozzles) were made (easily replaceable) by Kittilsen et al. (in Tables I and II), for the purpose of producing ingots at adequate casting speed with good surface quality (Kittilsen et al.; column 3, lines 50-67; column 4, lines 1-27; and column 5, lines 20-41). Kittilsen et al. do not specifically disclose the restricting elements between the permeable wall and an interior wall of the mold housing.

However, Foye discloses an apparatus (horizontal continuous casting of round billets 13) for lubricating a molten metal mold, in which the apparatus includes a reservoir 10 of molten metal, mold assembly 8, mold section 12, plate element 11, annular gasket 20, a lubricating device 23 having upper and lower (sectors) chambers 18,27 (of the annuli) and adjustable valves 17,26 to control the circumferential supply of oil around the mold in the region of the plate element 11, and secondary water sprays (abstract; column 1, lines 12-59; column 2, lines 36-71; column 3, lines 1-75; column 4, lines 1-14 and 34-41; and Figures 1-16). In another embodiment, annular gasket 35

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has six radial slots 36 (channels) in which the flow is controlled by valves (column 4, lines 72-75; column 5, lines 1-19 and 56-58; and Figures 6-8).

Although Foye discloses a plurality of valves that would "differentiate" the supply of oil around the circumference of the mold cavity for more uniform lubrication/cooling, Foye does not specifically disclose a plurality of plugs or similar restriction members that "differentiate" the supply of oil around the mold cavity.

However, Tarmann et al. disclose a device for introducing a lubricant into a mold for continuous casting of metals, including iron and steel, in which the device includes a ring groove 2 that includes inserted pieces 3 (plugs/restrictions) for subdividing the ring groove into sections 4 (segments), such that the supply of lubricant can be "differentiated" around sections 4 of the groove 2 via lubricant admission channels 5, for the purpose of independently providing lubricant uniformly into the ring groove segments 4 (column 1, lines 1-55; column 2, lines 1-21; and Figures 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the apparatus for horizontal casting of light metals, as disclosed by Kittilsen et al., by adding the restricting elements between the permeable wall and an interior wall of the mold housing in the horizontal continuous casting apparatus of Foye, in order to "differentiate" the supply of oil/gas/coolant around the circumference of the mold cavity in controlled amounts and pressures at predetermined locations (Foye; abstract; column 1, lines 12-18 and 41-59; column 3, lines 27-42 and 66-75; column 4, lines 1-14 and 72-75; and column 5, lines 1-19 and 56-58), and by using the plurality of plugs or similar restriction members that

“differentiate” the supply of oil around the mold cavity, as disclosed by Tarmann et al., in order to independently provide lubricant uniformly into the ring groove segments (Tarmann et al.; column 1, lines 26-55; and column 2, lines 1-21).

6. Claims 11-19, 21, 22, and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naess, Jr. et al. (EP 0 337 769) in view of Foye (US 3,556,197), and further in view of Tarmann et al. (US 2,690,600).

Naess, Jr. et al. disclose a horizontal continuous casting apparatus for casting aluminum and other metals, in which the apparatus includes a mold cavity 4 provided with a permeable ring 20 for the supply of oil and/or gas via gas bore 21 and oil bore 22, an inwardly protruding projection 15 extending along the surface of the permeable wall material (permeable ring 20 (held by tongue 27 and groove 26), which is provided along the interior wall of the mold cavity 4), first housing structure 11 contacting permeable ring 20, second housing part 5, and aluminum/steel sleeve 12 serving as a thermally insulating annular plate that includes the protruding projection 15 at its bottom side, with the sleeve held in by bolts to allow for removal/exchange with other sleeves of different sizes, and a cooling water supply 29-32 (abstract; column 1, lines 3-15 and 53-63; column 2, lines 1-10 and 28-63; column 3, lines 1-65; column 4, lines 1-52; and Figures 1-6). These features are advantageous for providing controlled, uniform cooling of one or more molds of selectively different shapes and sizes by providing oil and/or gas through the permeable material (abstract; column 1, lines 3-15; column 3, lines 15-19;

and column 4, lines 47-52). Naess, Jr. et al. do not specifically disclose the restricting elements between the permeable wall and an interior wall of the mold housing.

However, Foye discloses an apparatus (horizontal continuous casting of round billets 13) for lubricating a molten metal mold, in which the apparatus includes a reservoir 10 of molten metal, mold assembly 8, mold section 12, plate element 11, annular gasket 20, a lubricating device 23 having upper and lower (sectors) chambers 18,27 (of the annuli) and adjustable valves 17,26 to control the circumferential supply of oil around the mold in the region of the plate element 11, and secondary water sprays (abstract; column 1, lines 12-59; column 2, lines 36-71; column 3, lines 1-75; column 4, lines 1-14 and 34-41; and Figures 1-16). In another embodiment, annular gasket 35 has six radial slots 36 (channels) in which the flow is controlled by valves (column 4, lines 72-75; column 5, lines 1-19 and 56-58; and Figures 6-8).

Although Foye discloses a plurality of valves that would “differentiate” the supply of oil around the circumference of the mold cavity for more uniform lubrication/cooling, Foye does not specifically disclose a plurality of plugs or similar restriction members that “differentiate” the supply of oil around the mold cavity.

However, Tarmann et al. disclose a device for introducing a lubricant into a mold for continuous casting of metals, including iron and steel, in which the device includes a ring groove 2 that includes inserted pieces 3 (plugs/restrictions) for subdividing the ring groove into sections 4 (segments), such that the supply of lubricant can be “differentiated” around sections 4 of the groove 2 via lubricant admission channels 5, for

the purpose of independently providing lubricant uniformly into the ring groove segments 4 (column 1, lines 1-55; column 2, lines 1-21; and Figures 1 and 2).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the horizontal continuous casting apparatus for casting aluminum and other metals, as disclosed by Naess, Jr. et al., by adding the restricting elements between the permeable wall and an interior wall of the mold housing in the horizontal continuous casting apparatus of Foye, in order to "differentiate" the supply of oil/gas/coolant around the circumference of the mold cavity in controlled amounts and pressures at predetermined locations (Foye; abstract; column 1, lines 12-18 and 41-59; column 3, lines 27-42 and 66-75; column 4, lines 1-14 and 72-75; and column 5, lines 1-19 and 56-58), and by using the plurality of plugs or similar restriction members that "differentiate" the supply of oil around the mold cavity, as disclosed by Tarmann et al., in order to independently provide lubricant uniformly into the ring groove segments (Tarmann et al.; column 1, lines 26-55; and column 2, lines 1-21).

Response to Arguments

7. The examiner acknowledges the applicants' amendment provided with the request for continued examination received by the USPTO on April 11, 2005. Double patenting and 35 USC 103(a) rejections have been altered to incorporate the Tarmann et al. reference (see paragraphs 2, 5, and 6). The applicants have cancelled claims 20, 23, and 24. Claims 11-19, 21, 22, and 25-30 are currently under consideration in the application.

8. Applicants' arguments with respect to claims 11-19, 21, 22, and 25-30 have been considered but are moot in view of the new ground(s) of rejection.

With regard to the applicants' remarks/arguments on pages 8-11 of the amendment (addressing the double patenting and 35 USC 103(a) rejections in paragraphs 2, 5, and 6 above), the examiner addresses the following issues:

On page 8, 3rd paragraph, removal of the insulating plate limitation from the independent claims does not overcome the double patenting rejections, as open-ended "comprising" language remains in the present claims (see newly underlined portions of paragraph 2). Furthermore, the Tarmann et al. reference is now incorporated into the obviousness-type double patenting rejections.

On page 9, 1st full paragraph, whether or not the gas provides any lubricating effect in the mold continues to be not pertinent to the claimed subject matter. In the 2nd full paragraph on page 9, it is well known in the metal casting art to use a protective inert gas not only for magnesium, but also for other light metals (e.g. aluminum) and ferrous metals (e.g. iron), as these metals easily develop oxide inclusions and surface defects when exposed to an ambient atmosphere containing oxygen. One of ordinary skill in the metal casting art would routinely use a vacuum system and/or a supply of inert gas for casting of practically any type of molten metal. Furthermore, this argument by the applicants is also not particularly pertinent to the claimed subject matter.

In the paragraph bridging pages 9 and 10, as well as the 1st and 2nd full paragraphs on page 10 of the remarks/arguments, the applicants' statement that Foye

does not provide a separate supply of gas is not the reason for its combination with the primary 35 USC 103(a) references Kittilsen et al. and Naess, Jr. et al. Instead, the restricting elements (e.g. valves) between the permeable wall and an interior wall of the mold housing enable the supply of oil (also applicable to other fluids including gas, water, other coolants etc.) to be controlled or “differentiated” around the circumference of the mold cavity. As a result, the casting environments individually disclosed by Kittilsen et al. and Naess, Jr. et al. include separate supplies of oil and gas, although lacking the means to specifically control flows of oil and gas. Foye includes such flow control means (valves) that would readily be used on the separate supplies of oil and gas taught by both Kittilsen et al. and Naess, Jr. et al., resulting in controlled (“differentiated”) supplies. The Tarmann et al. reference remedies the lack of specificity set forth by Foye (valves), since Tarmann et al. disclose a plurality of plugs or similar restriction members that “differentiate” the supply of oil around the mold cavity.

In the 3rd full paragraph on page 10, as well as the 1st two paragraphs on page 11 of the remarks/arguments, permeable wall material is individually disclosed by Kittilsen et al. and Naess, Jr. et al., and restricting elements (e.g. valves) of Foye enable the mold housing to form a “plurality of sectors”. Since the applicants now specifically claim a “plurality of sectors” in a physical (structural) sense in the form of “restriction members” and “a plurality of plugs”, as set forth in independent claims 11 and 17, respectively, (even though the valves of Foye are deemed to divide the mold into a “plurality of sectors”), the Tarmann et al. reference provides the structural details and motivation for using the “restriction members” and “a plurality of plugs. Finally, Naess,

Jr. et al. disclose both vertical and horizontal continuous casting, while also setting forth the casting environment that includes separate supplies of oil and gas.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (571) 272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin P. Kerns *Kevin Kerns 6/5/05*
Primary Examiner
Art Unit 1725

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June 5, 2005